

***Election/Restriction***

Claims 1, 2 and 7 remain withdrawn from consideration without traverse.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3, 5 and 8-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The amendment to the claims reciting that the alkaline earth metal is distributed evenly through the body of the catalyst is not supported by the application as originally filed.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 5 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,544,793 to Okado et al. in view of JP 61-058812 A.

The invention involves a method for making an MFI zeolite by employing zeolite seed crystals during the hydrothermal synthesis. The zeolite crystals do not exceed 0.5 microns and the final product produced ranges from 0.05 to 2 microns.

Okado et al. disclose a ZSM-5 zeolite catalyst that is produced from a synthesis mixture analogous to that recited in the instantly claimed process. The examiner considers the broad ranges of the catalyst ingredients to be commensurate with those

set forth in the instant claims. The examiner further considers arrival at the optimum ranges to involve no more than routine experimentation because the Okado et al. composition has the same utility as the instant composition, and therefore the effective amounts of the components would be expected to be similar and result-effective variables. See particularly the examples. The document differs from the instantly claimed method in the failure to recite a zeolite seed crystal as claimed.

It is well known in the art of zeolite synthesis to employ seed crystals to produce final compositions having crystals of consistent and desired particle size. Therefore it would have been within the skill of an artisan practicing in this field to employ a zeolite seed with a size as recited herein to produce a final composition of optimum particle or crystal size. JP 61-058812 A is relied on for the teaching that ZSM-5 seed crystals on the order of those claimed herein (hundreds of angstroms, which is not more than 0.5 microns) are known to be used during the synthesis of zeolite materials to result in a final product having a particle size of one micron or less. It would therefore have been obvious to employ such crystals as taught by the prior art. See particularly the claims and pages 3-6. Selection of the particular crystal (.i.e. MFI crystal having silica to alumina ratio within the same range as the hydrothermal synthesis mixture) would not be an unobvious modification. JP '812 further disclose that it is known in this part to prepare ZSM-5 crystals having a particle size of one micron or less for the purpose of increasing the life of the zeolite and increasing the catalytic activity.

With respect to the new claim limitations that the seed crystal is evenly dispersed throughout the gel mixture it is pointed out that it is notoriously well-known in the art to

treat a seed particle prior to gel incorporation to make it even smaller to facilitate even distribution. In fact, JP-812 discloses milling the crystals in a mill for precisely this purpose. Regarding distribution of the alkaline earth metal throughout the catalyst body, it would appear that since the synthesis gel is stirred throughout synthesis, all materials are dispersed throughout the gel, and the alkaline earth metal will thus be dispersed throughout the catalyst body. See page 6.

### ***Response to Arguments***

Applicant again refers to a previous declaration wherein it is alleged that seed crystals of the JP '812 reference are employed and result in a catalyst with larger size than that obtained by the instantly claimed method. It is therefore again emphasized that the secondary reference clearly teaches that the size of the zeolite seed crystal is very small, as claimed herein, and that the size of the final zeolite produced is also within the range claimed herein. The reference further specifies that obtaining zeolites with this crystal size results in **expected** improvement in activity and catalyst life. The applicant's affidavit employs a comparative seed crystal **larger** than 0.5 microns. This is **not** a valid comparison to the closest prior art which teaches use of seed crystals on the order of hundreds of angstroms. The newly filed affidavit in no way is probative to the rejection of record in this application. In the declaration, small zeolite seeds are added during hydrothermal synthesis for the inventive catalyst, but **after** hydrothermal synthesis in the comparison. It is **expected** that the alkaline earth metal would not be distributed through the particle in this situation. This is further **not** a comparison with the closest prior art which does teach adding seed particles **during** hydrothermal

synthesis, which is in fact the art-recognized method for producing a zeolite when seeds are incorporated. Applicant continues to argue that the references cannot be combined without detrimental situations, but all of the affidavits of record that have tried to demonstrate such "comparison" have been flawed in a failure to actually accurately represent the prior art. Applicant argues that the primary reference uses a reaction mixture with calcium therein, and the secondary reference uses a seed crystal without calcium, so the calcium cannot be uniformly distributed throughout the catalyst. This is counterintuitive as applicant's own process employs alkaline earth metal in the gel synthesis mixture, and the seed crystal does not contain alkaline earth metal, precisely the same as the prior art combination. Applicant's comments regarding Okado '121 are not relevant to the rejection at hand. The examiner maintains that the primary reference teaches production of an alkaline earth zeolite material precisely as claimed in the instant application except for the addition of an MFI seed. The secondary reference teaches use of the same seed being employed by applicant, and further teaches that it is known in the art to use this seed of very small size for the particular purpose of controlling the size of the final product material. There is no evidence of record that would obviate this rejection at this point in the prosecution. Applicant's comments that any combination of the prior art would not be expected to result in even distribution of alkaline earth metal within the catalyst are not convincing. The prior art teaches inclusion of alkaline earth material in the synthesis mixture, which is stirred during processing, which would be expected to distribute the material throughout the finished product.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth D. Wood whose telephone number is 571-272-1377. The examiner can normally be reached on M-F, 5:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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